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Conference Abstract

The Collaborative Potential of Research Infrastructures in Addressing Global Scientific Questions

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Abstract

Research Infrastructures (RIs) are facilities, resources and services used by scientists to perform research and support innovation. A number of EU research infrastructures [e.g. e-Science and Technology European Infrastructure for Biodiversity and Ecosystem Research (LifeWatch) European Research Iinfrastructures Consortium (ERIC); The European life-sciences Infrastructure for biological Information (ELIXIR); the European Marine Biological Resource Centre (EMBRC ERIC); the European Research Infrastructure for Imaging

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Technologies in Biological and Biomedical Sciences (uroBioImaging ERIC)] have been building Virtual Research Environments (VREs), which include many virtual laboratories (vLabs) offering, one stop data access to scientists, high computational capacity and collaborative research platforms in support of the requirements of the digital science. This presentation gives examples on the use of the vLabs developed by LifeWatch ERIC which have subsequently been taken up as web services by other RIs.

The RvLab operates on a high-performance computer cluster, and has been used in order to analyse various properties of taxon equality, with a focus on marine species. This taxonomic information on marine biota is organized and made publicly available through the World Register of Marine Species (WoRMS) that delivers more than 250,000 described valid species names. Although scientists consider an *equal* status (in terms of contribution to overall diversity) to each taxon used in taxonomy, biogeography, ecology and biodiversity, the question "*are all taxa equal?*" has never been tested at a global scale. We present evidence that this question can be addressed by applying relatedness indices (Taxonomic Distinctness) over the entire WoRMS metazoan tree.

The virtual micro-CT laboratory (Micro-CT vLab), which can be used by the members of the scientific community interested in the digitisation methods and biological collections, makes the micro-CT data exploration of natural history specimens freely available over the internet. Micro-CT vLab makes it possible the online exploration and dissemination of micro-CT datasets, which are only rarely made available to the public due to their very large size and a lack of dedicated online platforms supporting the interactive manipulation of 3D data. Examples of how these vLabs can be used by other RIs are provided.

Keywords

research infrastructures, collaborative potential, global scientific questions, virtual research environments (VREs), virtual laboratories (vLabs)

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